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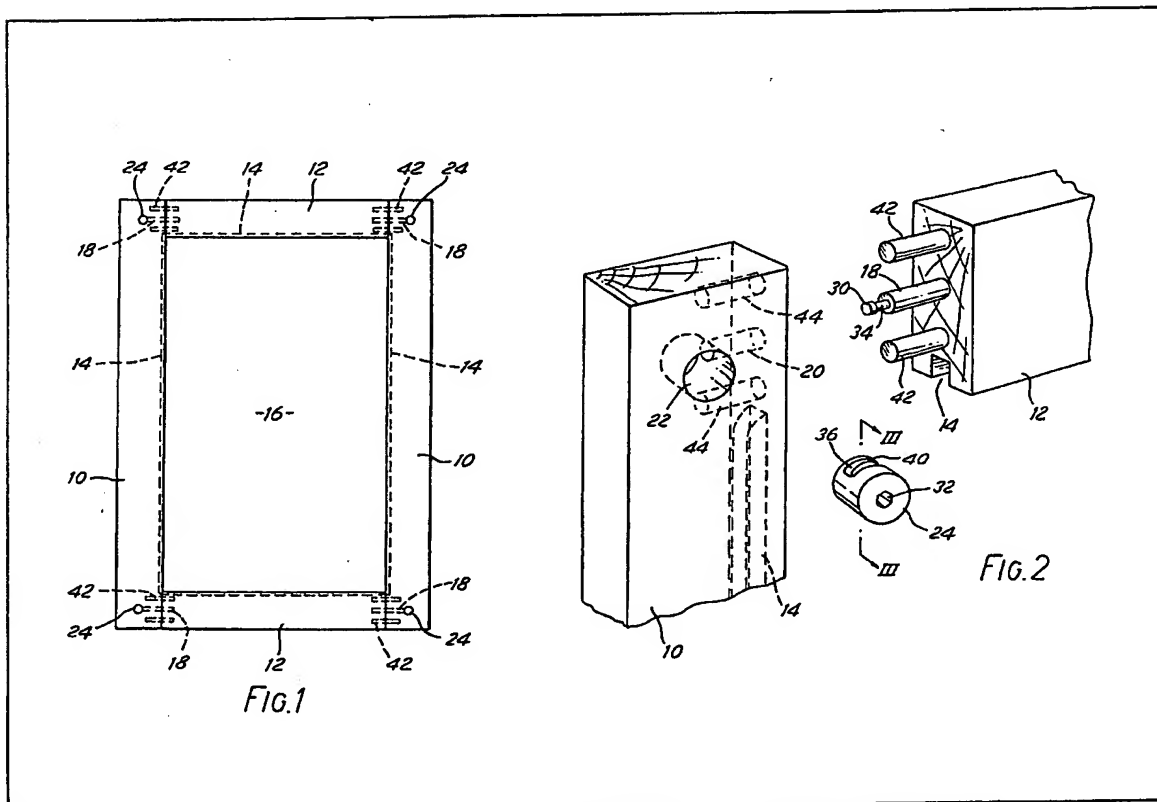
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(54) Furniture with inset panel

(57) A cabinet door has four frame members 10, 12 which receive an inset panel in grooves 14. The frame members are held together by a quick release fastening comprising a rotatable cam element 24 which engages behind a head 30 on a pin 18. The joint is stabilised by dowels 42 received in holes 44.



The drawings originally filed were informal and the print here reproduced is taken from a later filed formal copy.

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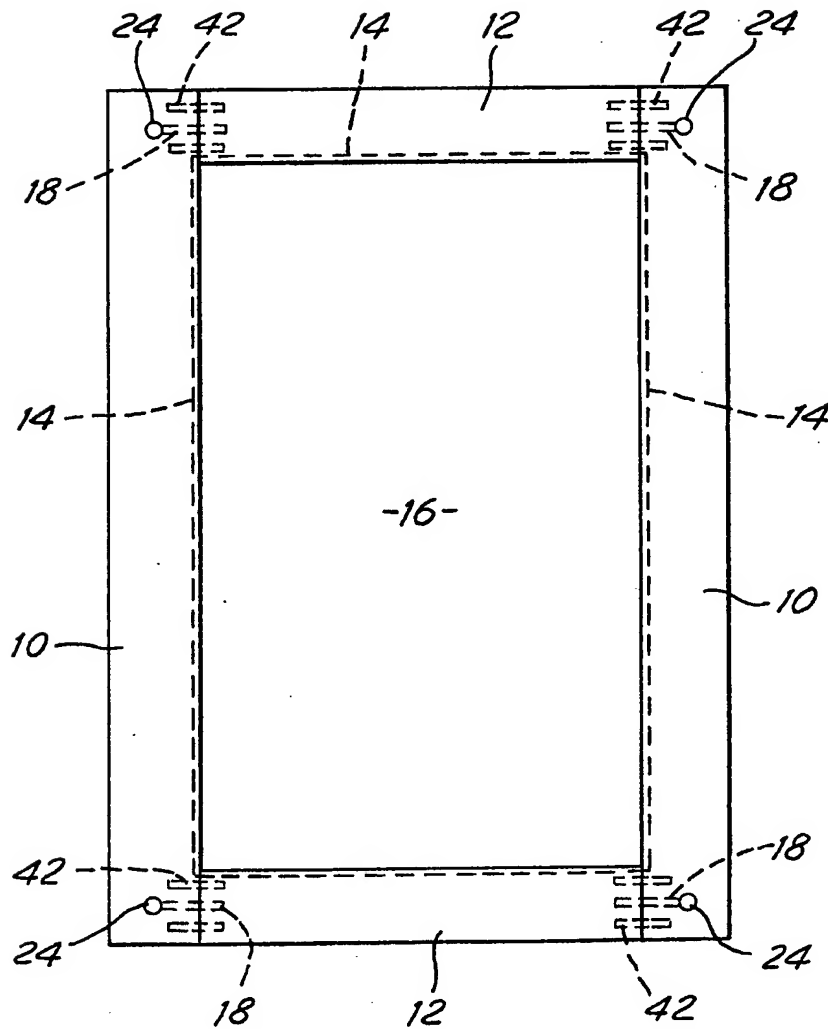
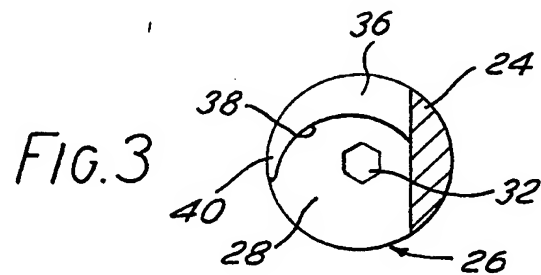
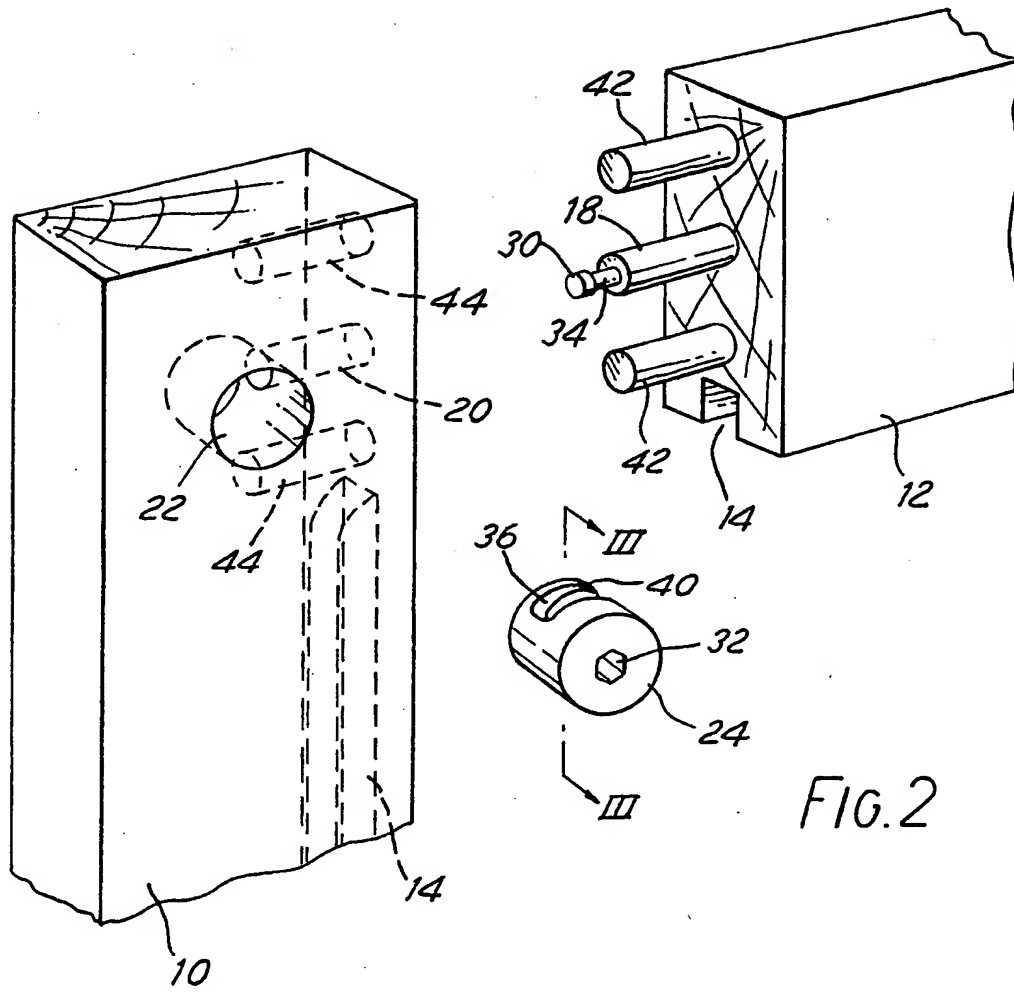


FIG. 1



## SPECIFICATION

## Furniture with inset panel

5 This invention relates to furniture. More particularly, it relates to furniture, and particularly cabinets, which have a panel inset in a generally rectangular frame. For example, it is applicable to cabinet doors.

In making cabinet doors, it is possible to use a single piece of wood, chipboard etc. However, in better quality furniture and/or for a more decorative effect it is known for the door to comprise a rectangular frame which holds captive an inset panel. The increased decorative effect is not great because normally the door is only painted or varnished when complete (this being easier) so contrasting finishes are not obtained.

This construction is relatively expensive because the fitting of the frame around the inset panel requires the skills of a cabinet maker. For the same reason, the door has to be manufactured complete (e.g. in the same factory as the individual pieces are manufactured). It is not practicable for the door to be assembled later on, e.g. at a warehouse employing only unskilled labour, at the point of sale, or by the final customer himself. This is in contrast to the entire piece of furniture, where it is quite common for the complete door to be sold as one of a number of components of "knock-down" furniture for subsequent assembly.

The present invention provides a generally planar furniture component, comprising a generally rectangular frame made up of four frame members, which when assembled hold captive an inset panel inside the frame; characterised in that quick release fastening means are provided to secure together the four frame members to make up the frame. The frame members can then be individually factory manufactured to the required standard, and stored and transported in unassembled form for subsequent assembly by unskilled labour, without gluing.

Preferably the quick release fastening comprises a pin extending from one frame member into an adjacent frame member, and the adjacent frame member may then have a rotatable element which engages with a co-operating formation on the pin when it is rotated. Preferably, the rotatable element has a cam surface for engaging the formation on the pin, so that the frame members may be brought into secure engagement with each other. The pin suitably extends longitudinally from the end of one frame member into the next. There may also be one or more dowels or further pins on one frame member engaging in corresponding holes on the other, to increase the stability of the joint formed by the quick release fastening.

A door suitable for a cabinet in (for example) a kitchen will now be described by way of example, with reference to the accompanying drawings, wherein:

*Figure 1* is a rear view of the door,

*Figure 2* is an exploded perspective view of parts of the door, and

*Figure 3* is a section on the line III-III in *Figure 2* of part of a quick release fastening.

Referring to the drawings, the door comprises two parallel vertical stiles 10 and top and bottom horizontal rails 12, making up a generally rectangular frame. These frame members may be made from wood, or from chipboard, or from other conventional materials.

As seen in *Figure 2*, the inwardly facing edge of each frame member 10, 12 is provided with a longitudinal groove 14, and when the frame members are assembled together into the rectangular frame these hold captive the edges of an inset panel 16. The vertical stiles 10 extend to the top and bottom edges of the door, abutting the ends of the horizontal rails 12, and so (as can be seen in *Figure 2*) the groove 14 in the stiles 10 is stopped so as not to extend to the very top or bottom of the stile.

Each end of each rail 12 is provided with a longitudinally projecting pin 18, which fits in a hole bored in the end of the rail 12. The pin 18 is provided with screw threading (not shown) on the end which is received in the rail 12, so as to secure it. This screw threading may simply bite into the wood or chipboard of the rail, or it can co-operate with a metal or nylon threaded bush in the hole in the end of the rail 12. Alternatively, it could simply be glued in position in the hole.

The pin 18 mates with a bore 20 in the inner edge of the end portion of the adjacent stile 10. This bore 20 leads to a stopped hole 22 formed in the rear surface of the stile 10. The hole 22 receives a rotatable element 24 which together with the pin 18 form a proprietary type of dry joint quick release fastener. The element 24 is also shown in *Figure 3*. It has a side opening 26 to an interior cavity 28. In use, when the pin 18 is inserted in the bore 20, an enlarged head 30 thereof passes through the side opening 26 into the cavity 28. The fastening is then tightened by inserting a hexagonal Allen key into a hexagonal socket 32 and rotating the element 24 in the hole 22. In doing this, the neck 34 of the pin 18 leading to the enlarged head 30 engages in a slot 36 in the side of the element 24, between claws 40. As this happens the enlarged head 30 engages behind a cam surface 38 of the claws 40, so that as the element 24 is rotated the pin 18 is drawn securely home into the bore 20. This ensures an accurate, tightly secure joint between the frame members 10, 12.

To give added stability to the joint thus formed, each end of the rail 12 also has two projecting wooden dowels 42 which may simply be tight push fits in corresponding holes in the rail 12, or may be glued in such holes. These are a push fit in bores 44 in the stile 10 alongside the bore 20. These then prevent the rail 12 pivoting about the axis of the pins 18 at either end. Of course, it may be possible to use only one of these stabilising dowels, or if desired it would be possible to use two quick release fastenings instead of one quick release fastening and one or more dowels.

Although the quick release fastening 18, 24 described is preferred for its cam action, it is also possible to use other kinds of quick release dry joint fastenings. Indeed, such joints are known for joining together components of knock-down furniture,

though in the past their use has been confined to butt jointing the end of one panel or member to the face (rather than the edge) of another panel. They have not previously been used to form a generally planar construction such as a door.

The construction described in which the four frame members of the door are held together by four dry joint quick release fastenings instead of by the conventional cabinet makers joints has a number of advantages. Skill is only required in the making of the individual frame members, not in the fitting of them together around the panel 16 to form the door. Accordingly, rather than shipping complete doors from the manufacturer's factory, it is possible to ship the individual frame components and panels separately. A variety of different frame members and panels can then be stocked at a central warehouse or by a retailer, for example comprising frame members 10, 12 in different kinds and qualities of wood and/or veneered or plastics coated chipboard. Panels 16 with various different types of decorative finish will also be stocked. It is then possible to make up a door to suit any particular requirements. It is useful, for example, in allowing the consumer to choose, say, kitchen cabinets in the required decorative effect. Indeed if the consumer at a later date decides to redecorate the kitchen, it is possible for him or her to dis-assemble the door, remove the panel 16, and either insert a new panel 16 or to give the panel 16 a new decorative effect e.g. by painting or covering it with wallpaper.

A further advantage stemming from the ease with which the components are put together is that the finishing (e.g. painting, varnishing etc.) will be performed on the individual components before they are assembled, rather than on the completed door after it has been assembled. It is thus an easy matter to provide contrasting finishes on the frame and on the panel.

Hinges for the door can be attached to one of the frame members during manufacture, or more preferably, to prevent damage and allow for making up into either left hand or right hand opening doors, at the time of subsequent assembly. For example, the hinges could be screwed into predrilled holes.

Where it is intended that the consumer will erect the door himself it may be preferable to provide an ordinary slot for a screwdriver in place of the hexagonal Allen socket 32. Moreover, the element 24 may if desired have an enlarged head so as to entirely cover the holes 22, when it becomes in its own right a somewhat decorative feature.

The construction described can also be used to form other fixed or movable panels in furniture.

## CLAIMS

1. A generally planar furniture component, comprising a generally rectangular frame made up of four members, which when assembled hold captive an inset panel inside the frame; characterised in that quick release fastening means are provided to secure together the four frame members to make up the frame.

2. A furniture component according to claim 1

wherein the quick release fastening comprises a pin extending from one frame member into an adjacent frame member, and the adjacent frame member has a rotatable element which engages with a co-operating formation on the pin when it is rotated.

3. A furniture component according to claim 2 wherein the rotatable element has a cam surface which engages the formation on the pin whereby the frame members are brought into secure engagement with each other on rotation of the rotatable element.

4. A furniture component according to claim 2 or claim 3 wherein the pin extends longitudinally from the end of said one frame member and is received in a hole in a side face of said adjacent frame member.

5. A furniture component according to any one of the preceding claims wherein, in addition to the quick release fastening means, one frame member has one or more dowels or pins which engage in a corresponding hole or holes in an adjacent frame member, thereby increasing the stability of the joint between said members.

6. A generally planar furniture component substantially as described herein with reference to the accompanying drawings.

7. A door for a cabinet, comprising a furniture component according to any one of the preceding claims.

8. A cabinet having a door according to claim 7.

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